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United States Patent [19][11] **Patent Number:** **6,081,744****Loos**[45] **Date of Patent:** ***Jun. 27, 2000****[54] ELECTRIC FRINGE FIELD GENERATOR
FOR MANIPULATING NERVOUS SYSTEMS****[76] Inventor:** **Hendricus G. Loos**, 3019 Cresta Way,
Laguna Beach, Calif. 92651**[*] Notice:** This patent is subject to a terminal disclaimer.**[21] Appl. No.:** **09/118,505****[22] Filed:** **Jul. 17, 1998****Related U.S. Application Data****[63]** Continuation-in-part of application No. 08/788,582, Jan. 24, 1997, Pat. No. 5,782,874, which is a continuation-in-part of application No. 08/447,394, May 23, 1995, abandoned, which is a continuation of application No. 08/068,748, May 28, 1993, abandoned.**[51] Int. Cl.⁷** **A61N 1/36****[52] U.S. Cl.** **607/2****[58] Field of Search** **607/2****[56] References Cited****U.S. PATENT DOCUMENTS**

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Primary Examiner—William E. Kamm**[57] ABSTRACT**

Apparatus and method for manipulating the nervous system of a subject through afferent nerves, modulated by externally applied weak fluctuating electric fields, tuned to certain frequencies such as to excite a resonance in neural circuits. Depending on the frequency chosen, excitation of such resonances causes in a human subject relaxation, sleepiness, sexual excitement, or the slowing of certain cortical processes. The electric field used for stimulation of the subject is induced by a pair of field electrodes charged to opposite polarity and placed such that the subject is entirely outside the space between the field electrodes. Such configuration allows for very compact devices where the field electrodes and a battery-powered voltage generator are contained in a small casing, such as a powder box. The stimulation by the weak external electric field relies on frequency modulation of spontaneous spiking patterns of afferent nerves. The method and apparatus can be used by the general public as an aid to relaxation, sleep, or arousal, and clinically for the control and perhaps the treatment of tremors and seizures, and disorders of the autonomic nervous system, such as panic attacks.

9 Claims, 5 Drawing Sheets